CONTINUING MEDICAL EDUCATION

Child Abuse and Neglect: Diagnosis and Management

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SUMMARY

Background: The findings of studies on the frequency of violence against children imply that many cases go undetected.

Methods: Selective literature review based on a search of different databases for publications on all types of violence against children, except sexual abuse.

Results: The physical abuse of children can involve blunt trauma, thermal injury, and the so-called shaking trauma syndrome (STS). Physical and psychological child neglect have very serious long-term effects. It can be difficult to draw a clear distinction of child abuse and neglect on the one hand, and acceptable behavior on the other, because of the varying social acceptance of certain child-raising practices. Münchhausen's syndrome by proxy (MSbP) is a rare, special type of child abuse.

Conclusion: At the beginning of the 21st century, well-established normative structures are in place to protect children against abuse and neglect, and the available help from social organizations can also have a preventive effect. Further improvements will depend on interdisciplinary coordination and better training of specialists in all of the involved disciplines.

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It was in the second half of the 20th century that society began to take greater notice of violence against children. Previous taboos were discarded, and attention began to be directed toward violence in the family and within small social groups. The reporting and investigation of child maltreatment, and the response to it, involve people from many different walks of life, ranging from parents, relatives, and acquaintances to child-care workers, teachers, association members, volunteers in children's aid societies, Child Protection Offices, police officers, prosecutors, and judges. From the 1960s onward, the topic of child abuse and neglect has received more attention from physicians as well, above all from pediatricians, pediatric surgeons, specialists in child psychiatry and psychosomatic medicine, general practitioners, and forensic physicians (1).

In this review article, we will discuss all forms of violence against children except sexual and emotional abuse and their long-term consequences. Thus, this article will concern physical and emotional neglect, physical abuse, and Münchhausen syndrome by proxy. We will present typical case constellations and characteristic patterns of injury that should arouse the suspicion of child maltreatment. We will then outline the appropriate behavioral options in response to child maltreatment and the medical interventions that should be undertaken to protect children against it.

The learning objectives for the reader are the following:

- to be able to recognize and diagnose different varieties of child abuse from the typical patterns of injury that they cause;
- to be able to distinguish the different types of child maltreatment and to know their long-term consequences;
- to know the appropriate behavioral interventions and possible medical interventions that can be used to protect children better.

Types of child abuse and neglect

– Physical and emotional neglect
– Physical maltreatment
– Münchhausen syndrome by proxy

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BOX 1

Typical injuries due to blunt trauma

- Bruises (e.g., monocle and spectacle hematoma after a punch in or near the eye)
- Injuries due to blows to the lips, mouth, teeth (swelling, bruises, and lacerations of the oral mucosa [so-called toothprint contours], loose teeth surrounded by blood, chipped teeth, injury of the pharyngeal mucosa [so-called feeding injuries, due to vigorous thrusting of the feeding spoon against the back of the throat])
- Bruises of the arms caused by a very tight grip
- Bruises of the chest in the so-called shaken baby syndrome
- Typically contoured parallel stripes after blows inflicted with an object (stick, belt, rope, etc.)
- Fractures after blunt trauma, more or less specific for child abuse depending on the particular type of fracture (*see Box 3*)
- In older children, bruises on the extensor surfaces of the forearms may be due to blows incurred during attempted self-defense.
- Bruises in various sites arise when a child is thrown, kicked, and/or struck.
- Small bruises in a linear, semicircular pattern can arise after bites (if fresh: swab the wound for DNA testing).
- Abdominal trauma (due to a blow or kick): injuries mainly affecting the left hepatic lobe, duodenum, jejunum, kidneys, and spleen

This article is based on a comprehensive, selective review of the literature and on the authors' professional experience.

Child neglect is the most common type of child maltreatment and has the most serious long-term consequences. Its physical signs may enable it to be diagnosed medically; if not, it can be detected only through the emotional and behavioral abnormalities that it causes.

It is mainly the specialty discipline of forensic medicine that has concerned itself with the systematic classification and assessment of bodily injuries with respect to their causation by child abuse. The first major question to be answered is what type of physical force has been applied to create the injury. Most often, blunt trauma is the cause; other causes are thermal trauma and the so-called shaking trauma syndrome (STS) or shaken baby syndrome (SBS).

Münchhausen syndrome by proxy (MSBP), in which another person—usually the child's mother—either fabricates or actually induces illness in the child, is still a little-known disorder. In general, the long-term emotional consequences of violence against children are still inadequately appreciated (2, 3).

The prevalence of child maltreatment

According to older literature that was summarized in a review article in 1983, the prevalence of child maltreatment a generation or more ago was 2% in Sweden, 7.7% in Finland, and 10% to 15% in Germany (4, 5). Reliable current figures from multiple different countries are not available, as far as the authors have been able to determine. The older data suffice nonetheless to indicate that people in different countries may well have a different understanding of what constitutes child abuse.

A study by questionnaire that was commissioned in 2002 by the German Federal ministry of Family Affairs yielded the following findings:

- 26% of all parents in Germany reject physical punishment of their children.
- 52% consider "a slap on the behind" appropriate.
- 5% use a stick.
- 17% consider "a sound thrashing" to be appropriate under some circumstances.

While the rate of child abuse among German parents is consistently said to lie under 10%, the corresponding figures for parents of other ethnic origins is 18% for Turkish families, 12% for immigrant families from the former Soviet Union, and 15% for families from the former Yugoslavia (5).

According to studies from the USA, nearly 80% of the persons committing child abuse are the custodial parents (and the biological parents in 90% of all such cases), and 6.6% are relatives. The same studies concluded that 56.5% of the abusers are women and 42.4% are men, while 75% of all abusers are under 40 years old (6).

History, physical examination, diagnostic assessment

The suspicion of child abuse

The suspicion of child abuse may arise because of the pattern of injury that is found, e.g., an injury at a site where blows are typically struck or with a typical appearance, such as parallel stripes (*Figure 1*). The plausibility of the proposed mechanism of injury is of

Neglect

Neglect is the most common type of maltreatment and has the most serious long-term consequences.

Varieties of physical maltreatment:

– Blunt trauma
– Thermal injury
– Shaking trauma syndrome
– Münchhausen syndrome by proxy

prime importance. Aside from this, a number of circumstances of other types can indicate the likelihood of child abuse (5, 10, 11):

- A child that has been injured through abuse is often not taken to the doctor immediately, but only after a delay.
- The history of the event as recounted to the doctor is inconsistent with the type of injury seen, the symptoms and signs, and/or the child's developmental state.
- Further ongoing questioning elicits multiple different versions of the history of the event.
- Siblings are said to have caused the injury.
- It may be stated that the child injured himself or herself.
- The psychodynamic evaluation may yield evidence of child abuse when the parents behave defensively, instead of showing the appropriate empathy and concern.

BOX 2

Oral injuries due to child abuse (from 11)

- Ulcerations on the inner surfaces of the lips
- Torn frenulum
- Dental injuries
- Toothprint contours
- Burns or scalds
- Children under the age of 3 years are most commonly affected
- Repeat cases in 50%

History

As soon after the event as possible, a detailed account of the events leading to the injury should be obtained and documented. Who did what, when, and how? Who else was present? What action did the parents take? What type of first aid, if any, was administered? Was the child taken to the doctor immediately, or only after a delay? Had there been any preceding problems or fights? Are there any exceptional stresses in the family, including a possible family history of child abuse? What was the parents' emotional reaction? (10)

Physical examination

The child should be fully undressed, and the whole body should be examined thoroughly, including the anogenital region. The growth parameters should also be measured and noted in percentiles. Injuries should be described precisely, with indications of their localization, size, shape, and nature. (For example, a typical, fresh injury of the "self-defense" type could be described as follows: extensor surface of right forearm, middle third, 3×2 cm ovoid swelling, well demarcated, bluish-purple.) When indicated, the contour of the injury should also be described, e.g., when this provides a clue toward the type of object with which the child was struck. All injuries should be measured and photographically documented.

Ancillary studies

According to the current interdisciplinary S2-AWMF guidelines of the German societies for general and social pediatrics and for pediatric surgery (see www.leitlinien.net), ancillary diagnostic studies should also be performed as indicated (11). When there is well-founded suspicion that a child under the age of 2 years has been abused, skeletal x-ray screening and a funduscopic examination are indicated, with skeletal scintigraphy ("bone scanning") as a possible additional study. A head CT (computerized tomography) is often performed acutely in children with neurological abnormalities but should always be followed by magnetic resonance imaging (MRI). CT, MRI, and ultrasonography can be performed to assess suspected injuries to other bodily organs (skull, abdomen, heart, cerebral Doppler flow study; soft tissues, bone). Laboratory tests serve to differentiate child abuse from other potential diagnoses and to assess the extent of injuries (5, 10, e2).

Psychodynamic evaluation

The patient's psychosocial situation should be ascertained (personalities of the parents, temperament of the child, social status, relationship biography), and the ability of the person primarily caring for the child to empathize appropriately with the child's condition should also be observed. Emotional coldness, inadequate empathy, and a defensive reaction to personal conflicts, reflecting a lack of introspection and

History

– Who did what? When and how?
– Parents' reaction?
– First aid?
– Other stressful circumstances in the family?

Physical examination

– Whole-body examination of the fully undressed child
– Precise description of findings of injury, including photographic documentation

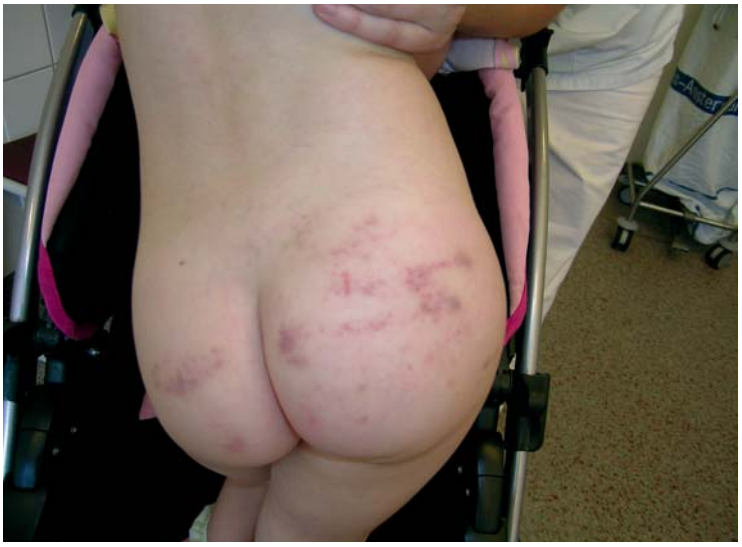

Figure 1: Parallel stripes after blows to the buttocks

unwillingness to think about the child's situation, as well as a personal history of being abused may be indications that a parent is a potential child abuser (3). There are no "definite" intrapsychic or family-dynamic signs of child abuse being imminent or having already occurred. Psychological test findings pointing toward what is called "dissimulation" (i.e., marked defensiveness and selection of answers according to their perceived social desirability, producing "better-than-normal" findings in certain adults and adolescents) may provide a diagnostic indication of possibly imminent violence within the family (12).

Blunt trauma

Injuries caused by blunt trauma (hematomata, contusions, oral injuries) are the most common cause of presentation to a doctor's office or hospital (see *Boxes 1 and 2*). Injuries due to sharp or penetrating trauma play a subordinate role. Injuries due to abuse must always be differentiated from accidental injuries, particularly when there is only a single injury. Sometimes, children are abused by choking or by blows to sensitive parts of the body. Blows inflicted with an object (stick, belt) often leave a typical, double-contoured pattern (*Figure 1*). Bruises from blunt trauma may indicate child abuse, depending on their localization, shape, and mechanism of origin. Suspicion can also be aroused by an unusual multiplicity of injuries, or by injuries in a child of inappropriate age for accidental trauma. Pre-mobile infants hardly ever have bruises of accidental origin (e3). Bruises whose shape indicates that they have been left behind by a very firm grasp are often found on the arms, or else—in infants and small children—on the chest. Bruises can be found in typical sites for falls (the forehead, tip of the nose or chin, extensor surfaces of the elbows and knees, shins, wrists, hips) or else in typical sites for blows to the body (scalp above the "hatband line"), eyes, mouth, ears, chest, back, buttocks, back of the legs, extensor surfaces of the forearms [self-defense injuries], dorsum of the hand).

These rules of thumb need not always apply exactly, as each case must be examined individually. For example, a monocle hematoma is usually produced by a powerful blow from the front, such as a punch in the eye; there are rare cases, however, in which an appropriately sized child can inflict the same injury on himself or herself by running into a doorknob. One should not attempt to judge the recency of bruises from their color alone, as there is no evidence that this can be done reliably (10).

Fractures of differing ages (callus forms 8 to 12 days after a fracture) and unexplained fractures are strong indicators of child abuse (*Box 3*). They are seen in children under 18 months of age in 80% of cases, while accidental fractures are seen in children over 5 years of age in 85% of cases. Three or more fractures are found in 60% of cases of abuse, while 80% of accidental fractures are singular. About 40% of the fractures are of types that are unusual in clinical practice (5).

Thermal injuries

Scalds and, less commonly, burns are seen in 10% to 15% of abused children (13).

Scalds

About 10% to 25% of all scald injuries (i.e., injuries due to the effect of hot liquids) in small children are said to be of non-accidental origin. Scalds due to child abuse often appear in a symmetrical stocking or glove pattern on the feet and ankles or the hands and forearms, and are sharply demarcated (the so-called water level mark in immersion injuries) (14, 15).

Burns

Burns (injuries from the application of dry heat) caused by child abuse are usually contact burns (direct

Bruises

The site and appearance of bruises may heighten the suspicion of child abuse through blunt trauma.

Burns caused by child abuse

– are usually contact burns
– usually involve the shoulder, back, forearm, dorsum of the hand, and/or buttocks

application of hot objects: electrical appliances, cigarettes [*Figure 2*], hot chipped wood, etc.). The commonly involved areas are the shoulders, back, forearms, back of the hand, and buttocks. Accidental burns are more often seen on the palms and on the palmar surfaces of the fingers (15).

Shaking trauma syndrome

Shaking trauma syndrome (STS), also called shaken baby syndrome (SBS), is a syndrome of traumatic injury consisting of subdural hematoma, retinal hemorrhages, and severe, diffuse brain injury, leading to the immediate appearance of neurological abnormalities (irritability, excessive sleep, vomiting, muscular hypotonia, somnolence, apathy, coma, epileptic seizures) (16–20). External injury is typically absent. Depending on where the abuser gripped the child, there may also be paravertebral serial rib fractures or metaphyseal fractures of the humerus or femur. In addition to the whiplash mechanism (formerly referred to as "whiplash shaken infant syndrome" [20, e4, e5]), rotational and shearing forces play a major role in generating this type of injury. There are frontal and occipital brain contusions as well as tears and avulsions of the bridging veins, often in proximity to the interhemispheric fissure *(Figure 3a, b, and c)*. The presence of a hemorrhagic cortical infarct indicates a repeated event, because the prerequisite for this finding is prior cortical venous thrombosis.

Some of the affected children (usually infants) only reach the hospital in severely obtunded condition because of status epilepticus, with central respiratory disturbances and partial absence of the brainstem reflexes (pupillary light reflex, corneal reflex, cough reflex). In less severe cases, many different types of neurological damage might arise, with the associated long-term consequences (5, e4, e5). Cerebrovascular dysautoregulation, microinfarcts, ischemia, hypoxia, and brain edema can ensue. According to the literature, shaking trauma is fatal in 12% to 20% of cases; 5% to 10% of the victims remain in a vegetative state, 30% to 40% are blind or visually impaired in one eye or both, 30% to 50% suffer from spastic paralysis or marked motor developmental retardation, and 30% develop epileptic seizures (5, 7, 8, 9, e5).

Funduscopy must be performed whenever shaking trauma is suspected. Further diagnostic studies include magnetic resonance imaging, computerized tomography, ultrasonography of the head, skeletal x-ray screening, and the following laboratory tests: urinalysis, complete blood count, GOT, GPT, amylase, lipase, coagulation studies (Quick test and PTT), von Willebrand antigen and cofactor, fibrinogen, AT III, D-dimers, and PFA 100. A diagnostic lumbar puncture should not be performed.

BOX 3

The specificity of various types of fracture as an indication of child abuse (from e2, 5, 10, 11)

- High specificity
  - Meta- und epiphyseal fractures (in children under two years old)
  - Dorsal or lateral rib fractures
  - Medial and lateral clavicular fractures
  - Sternum fractures
  - Scapular and shoulder fractures
  - Vertebral fractures
- Intermediate specificity
  - Multiple fractures in different stages of healing
  - Single fractures (when other evidence of maltreatment is present)
  - Complex skull fractures, particularly when accompanied by intracranial injury (fall from a height of less than 1.5 meters)
  - Pelvic fractures
  - Fractures of the feet, hands, and fingers
- Low specificity
  - Simple, linear skull fractures
  - Diaphyseal shaft fractures
  - Meta- and epiphyseal fractures in older children
  - Mid-shaft clavicular fractures

Münchhausen syndrome by proxy (MSBP)

Münchhausen syndrome by proxy (MSBP) is a disorder with four distinguishing characteristics (5, 22, e6):

- A child is taken to the doctor with disease manifestations that have been fabricated or deliberately induced by a person caring for the child, usually the mother.
- The child is taken repeatedly to different doctors, with excessive diagnostic testing and therapeutic interventions as the result.
- The person caring for the child denies knowledge of the true causes of the child's disease manifestations.

The definition of shaking trauma syndrome

A syndrome of traumatic injury characterized by subdural hematomata, retinal hemorrhages, and severe, diffuse brain injury, with nearly immediate neurological manifestations.

Münchhausen syndrome by proxy

– Deliberate generation of injuries
– Administration of injurious substances
– Seeking medical attention from one doctor after another
– Mothers who are primarily seeking medical help for themselves

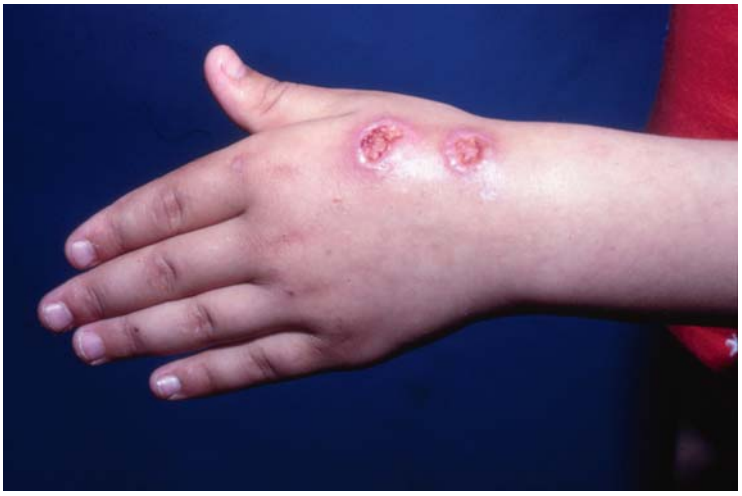

Figure 2: Cigarette burns on the dorsum on the left hand of a girl aged 8 years and 4 months

- The medically inexplicable symptoms and signs resolve when the child is separated from the responsible individual (usually the mother).

Symptoms can be induced, for example, by the administration of foreign substances (deliberate intoxication; for forensic certainty, a toxicological analysis should be performed), or else existing disease manifestations can be exaggerated, or both. The responsible mother often appears to be intensely worried. In the literature, three different clinical constellations are described, with partial overlap between them:

- The active generation of injuries and administration of substances ("active inducers").
- Presentation of the child to many different doctors, sometimes with variation in the alleged symptoms ("doctor addicts").
- Mothers whose primary motive in seeking medical attention is to receive attention, care, and help for themselves in their current situation, rather than for the child ("help seekers") (e7).

The incidence of MSBP is estimated at 2.5 cases per 100 000 children in the first year of life. It is said to be fatal in 6% to 33% of cases; one manifestation of MBSP, for example, is asphyxiation of an infant under soft bedcovers, which can be initially mistakenly diagnosed as sudden infant death syndrome (SIDS). MSBP is probably underdiagnosed in Germany (5, 7, 12). For further aspects, see *Box 4*.

Child neglect

Physical neglect is defined as inadequate general care and inadequate health care, which can lead to massive developmental disturbances up to and including psychosocial short stature and, rarely, death by starvation (23, e8, 24).

The child's height and weight should be compared with the normal values for age and with the expected values in view of the child's genetic family background. This comprises an assessment of the child's nutritional status, with potential evidence for malnutrition. The diagnostic evaluation should generally be performed on an inpatient basis. In extreme cases of death by starvation, the child is often found, at the end, to have additionally suffered from severe dehydration or an intercurrent infection, such as pneumonia or an ascending urinary tract infection.

Emotional neglect and early childhood deprivation are the potentially most severe risk factors for impaired emotional or intellectual development and are also found as cofactors in most cases of other types of child maltreatment. They are characterized by lack of recognition of the child's developmental needs and by the lack of a normal parent–child interaction. The child suffers either from quantitatively inadequate emotional support, or else from only weak support, delivered by constantly changing individuals (25, e9).

Documentation and the obtaining of evidence

Child abuse and neglect must be meticulously documented, particularly in cases where neither the Child Protection Office nor the police are immediately informed. Alongside the photographic documentation of visible injuries (with a scale on the picture; digital photographs are acceptable), the use of preprinted documentation forms is also recommended. Documentation sheets can also be downloaded from the Internet at www.kindesmisshandlung.de. The obtained history and the examiner's own physical findings should be put down in writing with an indication of the date and time; the same holds for all obtained tissue samples (urine, blood, hair, other [biological] samples, swabs) and for other pieces of evidence taken from the patient (foreign deposited substances of a biological nature, clothing samples, etc.).

Mental health consequences

Child abuse and (sexual) traumatization have long-lasting effects on mental health: a wide variety of

The definition of physical neglect

Inadequate general care and health care, which can lead to massive developmental disturbances up to and including psychosocial short stature and death by starvation.

Meticulous documentation

– Photographic documentation, with a scale on the photograph
– Documentation of visible injuries with photographs and preprinted documentation forms
– Written documentation of one's own clinical findings and of all other traces/samples taken.

cognitive and emotional disturbances, later problems with drug and alcohol abuse, risky (disinhibited) sexual behavior, a tendency to overweight, and criminality both in childhood and in adulthood. Corresponding preventive and therapeutic strategies are urgently necessary.

Interventions

Different types of intervention are indicated depending on the degree of suspicion, the circumstances of the child's presentation, and the type of abuse. Vague suspicions that arise during a consultation in a doctor's office require a different intervention concept from obvious, severe abuse leading to emergency hospitalization; sexual abuse must be handled differently from Münchhausen's syndrome by proxy. In general, child protection requires the cooperation of persons from many different professions, as well as knowledge of the locally/regionally available child protection resources and personnel. Hospitals are well advised to establish child protection committees, as has been done in Switzerland and Austria. Whenever the suspicion of child abuse or neglect arises, all potential responses should be considered, ranging from a conversation with the custodial parents, relatives, and other persons from the child's social circle (e.g., the family physician, the grandparents) all the way to notification of the Child Protection Office or the police in cases of severe abuse or the suspicion of sexual abuse (for the relevant medicolegal considerations, see below). If the facts of the case are unclear, forensic medical consultation is recommended, combined with appropriate documentation, so that evidence can be presented in a judicial setting (civil, family, or criminal court).

When the suspicion of child maltreatment is well documented in this way, the physician need have no fear of legal consequences resulting from the violation of medical confidentiality. The physician is at greater risk of incurring negative consequences (including self-reproach) for himself or herself by failing to follow up a suspicion of child maltreatment; this can lead to further maltreatment, often more severe than it was at first. Another possible option is to describe the facts of the case anonymously to the Child Protection Office or family court, together with a request for a recommendation about how to proceed and information about the types of aid that the law provides in such cases. This procedure, and the decision ultimately taken, should also be well documented. If further objects or pieces of

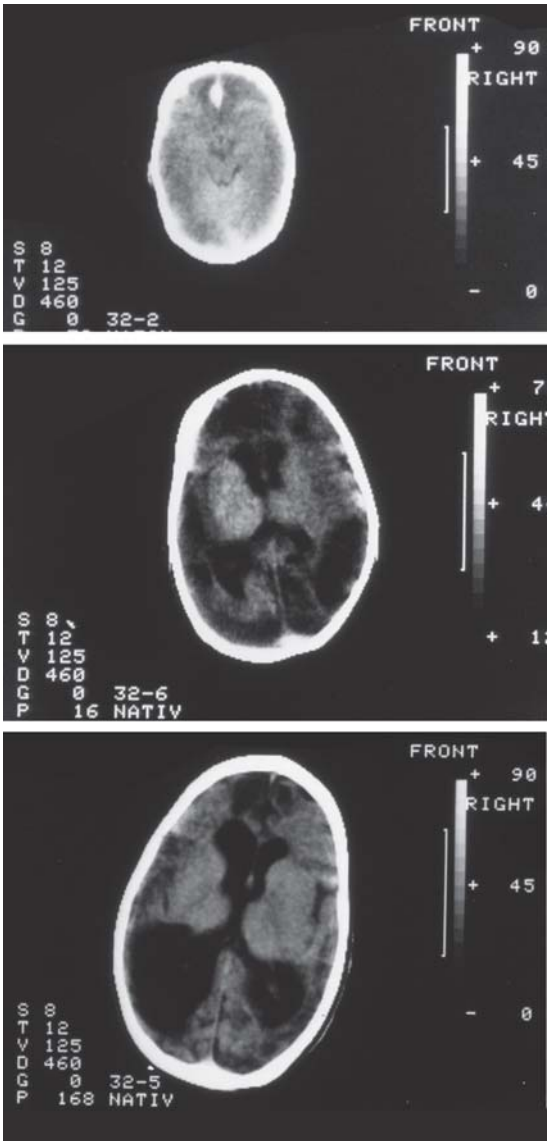

Figure 3: A five-week old baby thrown from a child-carrying unit onto a cobbled pavement.

a) Findings of the computerized tomogram (CT) on admission: left frontal parafalcial hematoma, cerebral edema, and subarachnoid hemorrhage over the tentorium cerebelli

b) Follow-up CT four weeks later

c) Follow-up CT at age 1 year: massive, asymmetric enlargement of all cerebral ventricles, particularly pronounced in the left trigone and occipital horn; wedge-shaped cortical infarcts. Clinical findings at age 3 years: microcephalic, crawls but does not stand, speaks single words, spasticity of all four limbs (more severe on the right), right optic atrophy

Medicolegal consultation

When the facts of the case are uncertain, a medicolegal consultation is advisable, as well as appropriate documentation to provide evidence in a legal proceeding (civil, family, or criminal court).

Securing of evidence

Any potential pieces of evidence coming into the physician's hands should be safely secured so as to preserve the chain of evidence for judicial purposes.

BOX 4

Typical findings in Münchhausen syndrome by proxy

- Patient, interested, but unworried mother
- Symbiotic mother-child relationship
- Parent (mother) with medical knowledge
- Medically inexplicable findings: electrolyte disturbances, presence of blood and/or foreign substances in stool or urine, intoxication, cutaneous infection, diarrhea
- Many invasive diagnostic measures and treatments, without therapeutic success
- Possibly, a problem of sexual abuse within the family
- Unusually intense efforts to form a relationship with the doctors and nurses caring for the child

evidence other than the documented medical findings should come into the possession of the physician or the hospital (e.g., articles of clothing with biological deposits on them, such as blood, saliva, secretions, etc.), these should be safely secured, so as to preserve the chain of evidence for judicial purposes.

Legal matters

The right of parents to care for their children is grounded in the German Constitutions's protection of marriage and the family (Art. 6 GG), which the "commonality of state institutions" has the duty to protect (Art. 6 Para. 2 Item 2 GG). The German Civil Code (*Bürgerliches Gesetzbuch*, BGB), § 1631 Para. 2, contains the following statement regarding the exercise of parental custodial rights under family law:

(2) Children have the right to be raised without violence. Corporal punishments, psychological injuries, and other degrading child-raising measures are forbidden.

State institutions such as the Child Protection Offices should, and must, provide help and intervene if necessary, and the family court is entitled to take appropriate measures if the well-being of a child is endangered (§ 1666 BGB). The police can also be involved, although this is not required by law. In 2005, in the wake of a number of spectacular cases of fatal child abuse, § 8a SGB VIII was introduced into the German Social Law Code (*Sozialgesetzbuch*, SGB); this enactment gives concrete form to the state's duty to protect children, requiring Youth Departments (*Jugendämter*) to assess the extent of endangerment to childrens' well-being. As is stated in § 8a Para. 1 Item 1 SGB VIII:

"If the Youth Department becomes aware of weighty reasons to suspect the endangerment of a child's well-being, it is obliged to assess the risk of endangerment through a collaboration of specially trained personnel from multiple disciplines […]."

There is no official duty to report cases of child maltreatment and neglect in Germany, yet the legal position of a physician with respect to an endangered child is that of a guarantor or protector. Thus, physicians have a higher duty than laypersons to take action against the endangerment of a child's well-being. Physicians have the duty to maintain confidentiality (§ 203 StGB, § 9 MBO-Ä), as do persons who assist physicians in the exercise of their profession (§ 203 Para. 3 Item 1 StGB). If, however, a physician withholds confidential information from the authorities, and further crimes are committed thereafter, a complaint against the physician may arise. Thus, the reasons for maintaining confidentiality, as well as the arguments for violating it, should always be meticulously documented. Information that a physician is ordinarily required to keep confidential may legally be disclosed if a situation of "justifying emergency" (*rechtfertigender Notstand*) prevails (§ 34 StGB). In case of judicial proceedings against a person suspected of abusing or neglecting a child, the treating physicians can be summoned to appear before the court as expert witnesses or as an official expert.

Conclusion

An interdisciplinary effort is needed among all the institutions sharing responsibility for child protection so that the problem of violence against children can be effectively addressed and the number and severity of cases can be reduced. Medical students and nurses need to be better trained in the subject, and physicians in the relevant specialties—general medicine, pediatrics, and trauma surgery—need to receive improved specialized training. In 2005, in the light of these pressing needs, the American Board of Pediatrics introduced the concept of the "child abuse pediatrician," stating that there should be one specialist of this type per 1 million population, and one in every academic faculty of medicine (e10). Whenever a pediatrician voices a suspicion

The doctor's duty

The doctor has a higher responsibility than a layperson to take action against the endangerment of a child's welfare.

Confidentiality

The physician's duty to keep medical data confidential does not necessarily stand in the way of participation in the judicial investigation of child abuse.

of child maltreatment, a forensic medical consultation should follow. Parental involvement is desirable; a psychologist should be consulted as well, and there should be a discussion with the family physician and also, whenever appropriate, with the Youth Department and/or the police. The physician's duty to maintain the confidentiality of medical information need not stand in the way of these proceedings.

Conflict of interest statement
The authors declare that they have no conflict of interest as defined by the guidelines of the International Committee of Medical Journal Editors.

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For e-references please refer to:
www.aerzteblatt-international.de/ref1310

A case report is available at:
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FURTHER INFORMATION ON CME

This article has been certified by the North Rhine Academy for Postgraduate and Continuing Medical Education.

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The solutions to the following questions will be published in issue 21/2010.

The CME unit "The Epidemiology, Etiology, Diagnosis, and Treatment of Osteoarthritis of the Knee" (issue 9/2010) can be accessed until 16 April 2010.

For issue 17/2010 we plan to offer the topic "Gait disturbances in old age—Classification, diagnosis, and treatment from a neurological perspective"

Solutions to the CME questionnaire in issue 5/2010:
Kollias AN, Ulbig MW: Diabetic Retinopathy: 1b, 2a, 3d, 4c, 5c, 6c, 7e, 8d, 9d, 10c

Please answer the following questions to participate in our certified Continuing Medical Education program. Only one answer is possible per question. Please select the answer that is most appropriate.

Question 1

What, as a rule, should happen before the physician reports a suspicion of child maltreatment to the police?

a) Reporting to the responsible Child Protection Office
b) The definite diagnosis of injuries
c) The separation of the child from his/her parents
d) The suspension of the child from school
e) Reporting to the responsible School Department

Question 2

Where are accidental burns usually located?

a) On the shoulder
b) On the forearm
c) On the palms
d) On the back
e) On the buttocks

Question 3

What oral finding may indicate child abuse?

a) Geographic tongue
b) Lichen planus
c) Ulceration of the inner surface of the lip
d) Malpositioned teeth
e) Lack of incisors in a 6-year-old child

Question 4

The typical double-contoured pattern of bruises that arouses the suspicion of child abuse is an indication of which of the following?

a) Kicks with hard shoes
b) Blows with the fist
c) Blows with a wet towel
d) Blows with the palm of the hand
e) Blows with a stick or belt

Question 5

What type of investigation is indispensable when shaking trauma is suspected?

a) Ophthalmological examination
b) Orthopedic consultation
c) Examination by an ENT specialist
d) Consultation of an internist for a general examination
e) History-taking by a psychiatrist

Question 6

Which of the following is a typical component of Münchhausen syndrome by proxy (MSBP)?

a) Foreign substances are usually administered by the father.
b) Persistent symptoms even after the person mainly caring for the child is denied contact
c) Presentation of the child to one doctor after another
d) Fathers who mainly seek attention and help for themselves
e) Mothers who seem impatient and uninterested, but are very worried

Question 7

Which of the following findings can be attributed to physical neglect of a child?

a) Failure to thrive
b) Hyperactivity
c) Urticaria
d) Dyscalculia
e) Psoriasis

Question 8

What percentage of parents in Germany consider it acceptable to give a child a "sound thrashing," according to a poll commissioned in 2002 by the Federal Ministry of Family Affairs?

a) 0%
b) 7%
c) 17%
d) 27%
e) 37%

Question 9

What bony injury is highly specific for child abuse?

a) Medial and lateral clavicular fractures
b) Diaphyseal shaft fractures
c) Hand and finger fractures
d) Pelvic fractures
e) Simple, linear skull fractures

Question 10

With what justification, under German law, can a physician disclose information that must otherwise remain confidential in a case of suspected child maltreatment?

a) A citizen is required to tell the police anything they ask.
b) There is a legal duty to make all such information public.
c) The situation constitutes a justifying emergency.
d) Duty to inform the patient
e) The law establishes an overriding duty to report suspected child maltreatment.

CONTINUING MEDICAL EDUCATION

Child Abuse and Neglect: Diagnosis and Management

Gert Jacobi, Reinhard Dettmeyer, Sibylle Banaschak, Burkhard Brosig, Bernd Herrmann

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CONTINUING MEDICAL EDUCATION

Child Abuse and Neglect: Diagnosis and Management

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Case Illustration

One morning, a single mother comes to the doctor's office with her 3½-year-old boy, who has a black eye. She states that he has vomited twice, and she is sure he has an upset stomach because of something he ate. Asked about the black eye, she says he probably fell, too. On examination, there are two well-demarcated purple bruises on the front and back of the left arm about one-third of the way from the shoulder to the elbow, as well as a painful scalp swelling on the back of the head, about 3 cm in diameter. There are also two parallel stripes of cutaneous erythema running diagonally across the buttocks, at a separation of about 1 cm. The child's vertical growth is appropriate for age, but he is mildly underweight. His mother says that he still occasionally wets the bed. The child seems somewhat anxious; other than this, the neurological examination reveals no abnormalities. On further questioning, the mother relates that she lives in an apartment with her boyfriend, who is not the child's father and is currently in a methadone program. Because she works, he must care for the child at certain times of day.

The mother is confronted with the following information: The black eye is quite possibly due to a punch in the face; the boy may well have vomited because of a concussion after falling backwards on his head; the bruises on the left arm are of a type generally caused by a very firm grip; and the double-stripe skin lesions on the buttocks clearly show that the child was struck with an object. She responds with denial, claiming not to know how the injuries arose.

The physician wants to hospitalize the child, rather than leave him in his mother's care without further investigation. The mother disagrees; she wants to leave the doctor's office, together with her son.

The physician now informs her that he cannot rule out the continued presence of a significant danger to the child's welfare, and that the law therefore dispenses him from the usual requirement to maintain medical confidentiality. He is thus allowed to report the case to the Child Protection Office, or to the police. If she should take the boy with her right now, as she wishes to do, there will have to be a judicial inquiry, with involvement of the Child Protection Office, into the matter of whether she is adequately fulfilling her duty as a mother to protect her son or is, instead, abusing her right to custody by insufficient cooperation. He, the physician, is a member of the Child Protection Task Force and has ready at hand the cellular telephone numbers of the necessary personnel. Hearing this, the mother finally relents, admitting that she, too, suspects her boyfriend of having struck the child the night before. The physician now informs the police with the mother's agreement. The police investigation reaches the same conclusion, the boyfriend is removed from the apartment for an initial period of ten days under the provisions of the Violence Protection Act, and a criminal indictment for battery is prepared. Meanwhile, it turns out that he has been indicted once before for domestic violence.

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